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ABSTRACT

This book provides a review of (primarily Australian) research on competency-based training (CBT). It includes information on the industrial and economic contexts that formed the backdrop for training reform in Australia. Information is presented to show how implementation of CBT has affected teaching, learning, and administration in vocational education and training (VET). Evidence about the effectiveness of CBT is taken from empirical studies conducted in Australia and overseas and theoretical debates on the relative merits of CBT. Studies are included that have examined the implementation of CBT from the perspective of VET teachers, administrators, and students. Findings are mixed. They show the positive and negative effects of CBT reforms on the work of teachers and administrators and the learning of students. Positive effects are an increased focus on delivering training that is responsive to the needs of the workplace, increased accessibility and flexibility of training for clients, and training based on national industry or enterprise-specific standards. The negative effects are related to the inadequate resourcing and preparation of VET teachers and trainers for the implementation of the reforms, increased administrative obligations, and dissatisfaction with outcomes of the learning approach that is promoted under a modularized curriculum. The review concludes with implications for further research, including comparisons of outcomes obtained by students prior to and after CBT implementation. (Contains 60 references.) (YLB)

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Competency-based training

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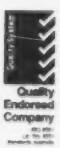

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Executive summary

ALTHOUGH THERE IS no one single definition of competency and competency-based training (CBT), the author has accepted the definitions of competency and CBT promulgated by the Australian National Training Authority through its National Training Framework. Competency is described as 'the specification of knowledge and skill and the application of that knowledge and skill to the standard of performance expected in the workplace'. Competency-based training is performance- and standards-based and related to 'realistic work practices'. It has been a pivotal part of training reform in Australia and overseas.

This book provides a review of the research on competency-based training. It includes information on the industrial and economic contexts that formed the backdrop for training reform in Australia.

This review of research provides information to show how teaching and learning and administration in vocational education and training (VET) has been affected by the implementation of CBT. Evidence about the effectiveness or otherwise of CBT is taken from empirical studies conducted in Australia and overseas, and theoretical debates on the relative merits of the approach. Included are studies that have examined the implementation of CBT from the perspective of VET teachers, administrators and students. Findings from these studies are mixed. They show the positive and negative effects of CBT reforms on the work of teachers and administrators and the learning of students.

Positive effects include an increased focus on delivering training which is responsive to the needs of the workplace, increased accessibility and flexibility of training for clients, and training based on national industry or enterprise-specific standards.

Negative effects are related to the inadequate resourcing and preparation of VET teachers and trainers for the implementation of the reforms, increased administrative obligations and dissatisfaction with the outcomes of the learning approach that is promoted under a modularised curriculum.

The review concludes with implications for further research. These include comparisons of outcomes obtained by students prior to and after the implementation of CBT.

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Context

THERE IS NO one exact definition of competency-based training (CBT) in the literature. However, the notion of competency accepted by the Australian National Training Authority (ANTA) through the National Training Framework (NTF) and made available to providers, users and regulators of training is an effective starting point for the development of a suitable definition for the purposes of this review.

Competency

The National Training Framework of the Australian National Training Authority describes competency as the 'specification of knowledge and skill and the application of that knowledge and skill to the standard of performance expected in the workplace' (ANTA 1998, p.10). This comprises all forms of workplace skills involved in the performance of specific tasks (task skills), the management of a range of tasks (task management skills), responses to non-routine tasks (contingency management skills) and the carrying out of specific workplace responsibilities (job/role environment skills). Applying knowledge and skill to the standard of performance expected in the workplace also involves the ability to perform in a given context and the capacity to transfer knowledge and skills to new tasks and situations (Mayer 1992).

Competency-based training

Competency-based training therefore is training which is performance- and standards-based and related to 'realistic workplace practices' (ANTA 1998, p.11). It is focussed on what learners can do rather than on the courses they have done. The performance of students is judged according to predetermined and objective industry standards rather than by comparison with the performance of other students.

CBT is a 'system of linked processes and an approach to teaching and learning' (Holland 1992, p.101). In the Australian context this refers to nationally accredited training and outcomes-based assessment mechanisms which themselves are derived from the implementation of nationally endorsed industry competency standards. They also refer to provisions made for the national recognition and portability of qualifications, flexible pathways with effective articulation and credit transfer within them, the recognition of prior learning (RPL), and the certification of student attainment. CBT is also aimed at improving the choices open to individuals in when, where and how they undertake their training. Options for self-paced learning, learning by different media and learning in different locations are essential features of a CBT system.

Stevenson (1995), however, is deeply concerned that CBT does not allow for an open debate about the purposes of vocational education. This is because it is dedicated to the achievement of industry goals. According to Stevenson the:

> *essential characteristics of CBT are that:*
>
> - *it is bureaucratically or politically defined*
> - *a pre-emptive good is assigned to education viz. achievement of efficient industrial practice*
> - *valued knowledge is constructed by industrial bodies*
> - *to achieve the pre-emptive good, education is valued for its development of the ability to apply pre-defined knowledge, emphasising, solely, targeted performances* (p.359)

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Competency standards

Competency-standards are 'benchmarks or specifications of expected work performance' (Mitchell & Bartram 1994, p.7). Under the guidelines of the NTF they must comprise detailed descriptions of what a worker is expected to do in order to demonstrate successful attainment of a certain competency. As well as providing details on the various aspects of competency that have already been discussed, competency standards in Australia should incorporate specifications on the knowledge, skills, values and attitudes required to provide further evidence of the attainment of competence. They must identify key competencies and incorporate language, literacy and numeracy

competencies. Where necessary, the standards should also incorporate competencies which are derived from regulatory and licensing requirements, and those which are specifically related to occupational health and safety.

There are three types of national competency standards: industry, cross-industry and enterprise standards (Thomson 1995). Industry standards cover requirements relevant to the needs of enterprises in that industry. Cross-industry standards refer to requirements which span two or more industries such as assessor standards or workplace trainer standards. Enterprise standards are specific to individual enterprises such as those developed for McDonald's Australia Limited or for Conaust Limited. These can also relate to industry and cross-industry standards.

International training reforms

Harris et al. (1995) provide a comprehensive discussion of the historical context of competency-based systems of skills and knowledge acquisition in the United States of America. They also provide a brief overview of reforms which have taken place in other Organisation for Economic Cooperation and Development (OECD) countries. These researchers use the term competency-based education and training (CBE/T) to emphasise the dual importance of broader education and specific skills training. They posit the argument that CBE/T stems from economic and social forces which emerged from the Industrial Revolution, and gained momentum during World War I, the 1920s and the Great Depression, World War II and the period immediately following it, and more recently in the 1980s. In the United States these forces resulted in the development of training strategies to improve the skills available to workers and military personnel to operate more complex technologies and undertake more complex activities in the workplace. Training was broken down into discrete tasks aligned to components of particular jobs. Progress to subsequent and more difficult tasks was based on successful performance of the preceding tasks. Assessment of competence was primarily performance- and standards-based. Harris et al. argue that these changes were the precursors to current notions of CBE/T.

The introduction of training reforms based on CBT in the United Kingdom, Scotland and New Zealand is briefly described in the following section.

England, Northern Ireland, Wales

The White Paper on employment for the 1990s (Great Britain Department of Employment 1988) provided a blueprint for changes to the vocational training system in England, Northern Ireland and Wales. Taking into account changes to the demography of the population, the nature of work itself, and in global markets, the paper recommended the development of an 'appropriate training system ... to ... ensure the provision of relevant skills'. Furthermore, British industry and commerce would need to become more competitive, which necessitated enterprises becoming 'increasingly alert to new opportunities, and to adapt to changing technologies, changing markets and changing tastes' (p.10). These developments required enterprises, commerce and industry to develop 'a high degree of commercial expertise ... and a more adaptable workforce from top management to the shop floor' (p.10).

The paper also recommended that training for work would be based on developing standards-based work-related competencies. Standards were to be identified by industry-led bodies and were to be drawn up for all sectors and occupational groups. The National Council for Vocational Qualifications was established, its purpose being to validate the standards and to design and implement the National Vocational Qualifications (NVQs) which would be awarded to learners and workers on the achievement of specific competencies either in the classroom or in the workplace. The NVQ concept of competency standards consists of a system of units which are related to the functions of a number of occupations or jobs.

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By 1999 a national qualifications framework overseen by a new qualifications and curriculum authority would be established and would include 'both academic and vocational qualifications ... aimed at ... overcoming traditional barriers within the system. Its main objective was to allow individuals and employers to establish arrangements to enable their 'employees to attain progressively higher level skills'. Its responsibilities included the accreditation for NVQs and extended to Wales and Northern Ireland.

Scotland

The Scottish Vocational Education Council (SCOTVEC) was set up in 1985. Its purpose was to develop a system for awarding vocational qualifications based on units of study covering specific topics and incorporating a number of skills which must be demonstrated to achieve competence. These qualifications—

Scottish Vocational Qualifications (SVQs)—co-exist with qualifications based on general and academic skills. In 1997 the Scottish Qualifications Authority (SQA) was established 'to provide a framework for education and training for the whole population of Scotland, from school age onwards ... within this framework individuals are able to take qualifications ... at any stage of their lives, and at almost any stage of their careers' (Scottish Qualifications Authority 1999). This system, it was claimed, represented 'a major step towards a unified coherent Scottish education structure combining both academic and vocational routes' (The British Council Scotland and the Scottish Office, Education and Industry Department 1998).

NVQs and SVQs are arranged according to a five-level framework, with levels ranging from foundation skills for semi-skilled occupations to those for professional/senior management occupations, covering 11 major areas, with each relating to a major sector of industry/commerce. The qualifications can be used to progress to higher education or to work.

New Zealand

In 1990 the New Zealand Education Amendment Act established the New Zealand Qualifications Authority. The objective of this authority was to establish a national framework for national qualifications comprising competency-based unit standards covering school and post-school education and training. The framework encompasses general academic learning from secondary schooling to university. An eight-level qualifications framework was also developed and included national certificates (levels 1 to 4), national diplomas (levels 5 to 7) and degrees (levels 7 to 8). National certificates and national diplomas, which have been developed with industry and for industry, cover a broad range of occupations and industries. They can be acquired on the job, are open to all and can be commenced at any age. They are portable and wide-ranging (in February 1999 they numbered over 550). In addition, experience can be counted towards qualifications. National certificates and national diplomas comprise 'unit standards' which describe a specific skill or set of skills required to do a job. These unit standards, once achieved, can be used as a 'mini' qualification to indicate to employers that skills have been obtained even if the national certificate or diploma is not yet completed.

The promotional materials which describe national certificates and national diplomas inform would-be trainees and students that they stand to gain better job prospects, faster advancement and better pay, and greater job satisfaction

(New Zealand Qualifications Authority 1999, p.2). They inform employers that they can obtain a skilled workforce, better teamwork, guaranteed standards, on-the-job training and cost-efficiency.

The Industry Training Act of 1992 established industry training organisations with responsibility for administering the delivery of systematic training programs and setting national industry standards. In addition, national standards bodies cover the areas of learning not covered by the industry training organisations, namely general and academic education. Training providers also need to be registered and accredited by the qualifications authority. As at February 1999 there were 57 industry training organisations. Furthermore, more than 20 000 New Zealanders had taken advantage of the new system and obtained national certificates or diplomas.

Training reform in Australia

Economic imperatives

The impetus for the implementation of CBT in the Australian vocational education and training (VET) system was provided by the adoption of an agenda for training reform aimed at developing a better skilled workforce in order to improve international competitiveness. From the mid-1980s, foreign debt, trade imbalances and balance of payment problems had been limiting the competitiveness of Australian industry in global markets. These problems were blamed in part on the traditional reliance on primary exports, the slowness of Australian industry to upgrade its plants and processes and the lack of attention to developing and improving the skills of workers. A number of industry reforms were set in train to improve the competitiveness of Australian industry and to shift the emphasis away from traditional primary exports to value-added goods (for example, education, pharmaceuticals, and defence and communication technology). These reforms included the restructuring of awards, the removal of obsolete job classifications, the reduction of traditional occupational demarcations, and the establishment of skill-related career paths linking training skills and wages (Field 1990). These changes heralded the gradual disappearance of the low-skilled jobs generally occupied by those with limited training or ability.

The restructuring of Australian industry to reflect changed fortunes in the global market meant that there was an increased need for workers who could adapt to, and use, new electronic technologies, and who were able to work

independently as well as collaboratively in autonomous work groups to achieve business outcomes. The development of these skilled workers was to be achieved through extensive industry-led reforms of the VET system. These reforms became part of what was to become known as the national training reform agenda.

Reforming the training system

Competency-based training

Training reform led by industry to meet the needs of industry was seen as the way to ensure that Australian industry had a pool of appropriately trained and skilled workers. Competency-based training based on nationally accredited industry competency standards was seen as the pivotal feature of these reforms.

National competency standards

The new training system was to be predicated on the development of industry competency standards. Competency standards for the different industries and enterprises in Australia were originally overseen by the National Training Board (NTB), a body set up in 1990 to endorse national competency standards established by approved competency standards bodies (CSBs) representing specific industry interests. The standards were subsequently expanded to include enterprise-specific and cross-industry interests. National competency standards were to be related to the Australian Standards Framework, which comprised eight levels of qualification ranging from operatives through to tradespersons and supervisors and managers. The implementation of CBT was to be in place by December 1993.

The NTB was heavily criticised for focussing too narrowly on performance and neglecting the knowledge and understanding which underpinned competency. The board subsequently broadened its concept of competencies by including statements of knowledge, attitudes and values in the competency standards (NTB 1992). In 1995 the functions of the NTB were taken over by a Standards and Curriculum Council under the auspices of the Australian National Training Authority, and eventually subsumed by the Australian National Training Framework Committee.

Opening up the training market

The agenda for reform also included the promotion of an open national market for the provision of educational and training services. This meant that TAFE

providers were to become more entrepreneurial in competing with other providers for 'fee-for-service customers' and collaborating with private companies to acquire equipment.

Improving access and equity

The agenda for reform was especially focussed on improving access and equity. This meant making training available for those groups which had traditionally not benefited from structured vocational training or further education in general. Groups singled out for special attention included women in non-traditional areas, people with disabilities, individuals from non-English-speaking backgrounds, Aboriginal and Torres Strait Islanders, students in remote and rural areas, single parents with sole responsibilities for children, and the unemployed.

National recognition of training

A national approach to the recognition of training was also adopted. This resulted in the implementation in 1992 of the National Framework for the Recognition of Training (NFROT). This framework included mechanisms for the recognition of prior learning, credit transfer, articulation, accreditation of courses, registration of private providers, and mutual recognition of credentialling of qualifications. By 1996 this framework was subsumed by the National Training Framework.

A new structure for entry-level training

Also promulgated under the agenda was a newly structured entry-level training system. The purpose of the new system was to help create the 'clever country' by improving the skills of the workforce. This system was to incorporate and expand upon the apprenticeship and traineeship systems already in place. It was to increase the vocational activities of students in schools and relate these to the new structured system. The rationale for its introduction was that the current entry-level training system was not meeting the current and future needs of industry, and was not providing sufficient opportunities to gain an occupation for those young people who were not going on to higher education. This was especially the case for young women and other disadvantaged groups. Mechanisms for adults to enter structured training were also required. Remuneration for young people was to take the form of an allowance rather than a wage. This allowance was to be based on competency levels, the extent of off-the-job training, the nature and quality of

on-the-job training, and the need to provide sufficient opportunities for those who sought training (DEET 1991).

Problems with implementing original reforms

Insufficient industry and provider commitment

A review of the previous government's training reform agenda, conducted by the Allen Consulting Group (1994), and commissioned by ANTA, had shown that the implementation of CBT and other reforms by the training system was not meeting the requirements set down in the competency standards 'despite the investment of untold sums of money and time' (p.36).

In an address to a conference of educators in Taiwan in 1998, Mark Paterson, chair of the Australian Chamber of Commerce and Industry, described the limited engagement in training reform undertaken by enterprises and the resistance of training providers. He claimed that 'in plain terms the training providers and recognition agencies were not enthusiastically or effectively embracing a CBT approach to training and certification and were still relying predominantly on more institutionally sourced and structured curriculum as the benchmark for recognition' (1998, p.4).

Overly prescriptive standards

The Allen review had presented findings which showed that, although the development of nationally endorsed competency standards was welcomed by industry, there were concerns about the prescriptive nature of the standards. What was required were frameworks which while 'providing national competence benchmarks, leaves considerable discretion to users to interpret them in their own context'. The review also reported that training providers were looking for 'similar flexibility so that modules, courses and training programs can be developed more quickly and cost effectively based on national competency frameworks rather than detailed prescriptions' (p.43).

A new framework for training

The National Training Framework was subsequently created, partly in response to the recommendations of the Allen review which also recommended the abandonment of the term 'training reform agenda' in favour of the more inclusive term 'framework'. It was to be overseen by the National Training Framework Committee (NTFC). Although competency standards

continued to play a critical role, they then became incorporated into a specific component of what are called training packages.

This framework aimed to introduce arrangements for a more flexible and industry-relevant regulatory environment. The NTFC had responsibilities for the endorsement of competency standards, assessment guidelines, and related VET qualifications. It also had responsibility for providing advice to the ANTA Board on policies to ensure that quality training outcomes were nationally consistent, while meeting the training needs of industries. Under the NTF, responsibility for determining national VET qualifications resided with industry bodies rather than through the accreditation of courses by State training authorities.

National recognition of training

The NTF also comprises the Australian Recognition Framework (ARF). The framework includes requirements for the registration of public and private providers of training and assessment services and for the mutual recognition by registered training organisations (RTOs) of national AQF qualifications issued by such providers. Training organisations are registered to provide training and assessment services, including the issuing of qualifications and statements of attainment. Provision is also made for the registration of organisations to provide assessment services only. Where registered organisations meet the national standards for quality endorsement they will also be able to self-manage the scope of their registration, and self-accredit courses where no relevant training packages exist. Initial registration of RTOs is based on the organisation's ability to demonstrate capacity to meet the national core and relevant product/service standards and any other requirements of the relevant State or Territory. Continuing registration is dependent on compliance as measured through monitoring and audit.

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All organisations seeking national recognition of their products and services must be registered by a State/Territory training authority or operate in partnership with an RTO. This RTO will become the body responsible for quality assurance of recognition for the products and services provided by the partner organisation. States and Territories will mutually recognise registration decisions of other States and Territories. This means that qualifications and statements of attainment will have mutual acceptance throughout Australia. RTOs may also operate within another State or Territory and be mutually recognised by these State training authorities. However, RTOs which operate in

more than one State need only to communicate with the primary recognition authority, the authority which provided their initial registration. Qualifications and statements of attainment are also issued under the authority of this primary recognition authority.

Quality assurance

The NTF also incorporates definite mechanisms for quality assurance. These include national standards for registration together with evidence for meeting those standards. The framework also includes nationally agreed protocols which govern the operation of monitoring and audit arrangements of RTOs.

Training packages

Training packages are the new formal reference points for information on nationally legislated requirements for the implementation of CBT. They comprise documents which contain descriptions of the NTFC-endorsed competency standards, assessment guidelines and qualifications which pertain to a particular occupation. Also included are non-endorsed components, namely learning strategies, assessment resources and professional development materials.

New Apprenticeships

New Apprenticeships within the National Training Framework are comprised of a negotiated training program which is responsive to the needs of employers and apprentices and trainees. The program involves obtaining a nationally recognised qualification through paid work and structured on-and off-the-job training. A registered training agreement between employer and the apprentice/trainee, and which has been validated by relevant State/Territory training authorities, provides guidelines for the mutual achievement of objectives. These guidelines set out the obligations of employers to provide appropriate training and the obligations of the apprentice/trainee to perform according to the agreement. These contracts will refer specifically to the training package and the qualifications to be received.

User choice

The Allen review argued that what was required to get enterprises to participate in the reforms was to increase their role in making decisions about where they 'bought' their training; that is, if they were able to decide which training provider would be funded to provide the off-the-job component of structured on-the-job/off-the-job entry-level training for their apprentices or

trainees. These initiatives were to be confined to training which was delivered under contracts of training or training agreements and allowed employers and apprentices or trainees to collectively agree to buy accredited training from any registered provider (including the enterprise itself if it were accredited) which most suitably met their needs.

According to the Allen review, this would signify a shift from a supply-driven, top-down approach to training (decisions made by training providers and government agencies) towards a demand-driven (decisions made by individual clients and enterprises) approach. This means that a 'genuine market relationship would be developed between training providers, particularly TAFE, and a substantial and demanding group of enterprise or individual clients' (p.57). The Allen review used the term 'user buys' which was also interpreted as meaning user choice.

The NTF has adopted the term 'user choice'. The funding mechanism for New Apprenticeships is the user choice program through which public funds are directed to individual RTOs based on the choice of RTO made by the client.

Qualifications

In 1994, the AQF was introduced to broaden the range of VET qualifications and to specify direct linkages to school and higher education sectors. This enabled articulation between school and VET, and VET and higher education. Paterson (1998) is of the opinion that this change was welcomed. However, he makes the point that three years later there was still confusion in the minds of employers and individuals seeking training and recognition, and that many providers were continuing to use superseded qualifications like the associate diploma and advanced certificate. According to Paterson (1998), this anomaly is being addressed by the requirement for competency standards in training packages to identify the qualifications that can be gained.

Under the NTF there are six levels to the AQF. These are:

- certificate I
- certificate II
- certificate III
- certificate IV
- diploma
- advanced diploma

Evaluating CBT

Deficiencies and concerns

A narrow way for looking at competence

FROM THE OUTSET the NTB's notion of standards and competency-based training was seen to be flawed. It was perceived to be too narrow and to pay insufficient attention to underpinning knowledge, values and attitudes. It was also seen to promote a concept of learning based on behaviourist principles which had little concern for an authentic development of expertise and competence, and which focussed on that which is 'directly observable and deemed worthy of reward by employers' (Brown 1992, p.27). It was also seen to disregard 'traditional concepts of long-term skill development or educational achievement ... in favour of ... short-term objectives of job performance' (Jackson 1992, p.192). Because it had been created to meet the needs of award restructuring, many believed that it had not been open to comprehensive 'scrutiny or debate by educators' (Holland 1992, p.101).

It has been generally accepted that there is more to competency than the performance of a specific skill or sets of workplace skills. According to Mitchell and Bartram (1994), complementary evidence of knowledge and understanding which underpins this performance is also required and includes being able to recall information to solve routine tasks, interpreting new information and selecting from a number of alternatives those actions which will bring the best results, and bringing together a number of discrete facts to create a new way of looking at the concepts and ideas. Knowledge and understanding involves knowing what, how and why certain actions are taken.

According to these researchers evidence of knowledge and understanding when assessing occupational competence assists assessors to determine whether or not the individual has the ability to meet the standards across the

many different situations described in the standards. It also helps the assessor to decide that the performance being observed is reliable; that is, it can be repeated when required and is not a one-off occurrence.

Mitchell and Bartram (1994) also provide specific guidelines for the selection of those who should be involved in identifying the knowledge and understanding that is 'derived from and firmly related to' (p.28) the standards for an occupation. They should be those who are experts in the field, currently working or managing workers in this occupational area, or providing the education and training for the achievement of occupational competence. They also suggest that these individuals should possess the ability to conceptualise and explain changes and represent a range of different perspectives.

Although Mitchell and Bartram's research was being undertaken for the United Kingdom Employment Department in relation to the development of the national vocational qualifications and Scottish vocational qualifications, much of it is relevant to the Australian context and has been adopted by the relevant agencies.

Gonczi (1998) believes that what is required in vocational education is not a narrow performance-based approach to competence but an integrated approach which does not make a distinction between knowing and doing. According to Gonczi, 'the capacity to bring together knowledge, values, attitudes and skills in the actual practice of an occupation is the kernel of the integrated concept' (p.36).

CBT's focus on what Stevenson (1992) calls procedural skills has been criticised for disregarding the need to develop more strategic forms of skills and knowledge in students. Stevenson believes it is this 'strategic control knowledge' which will help them to diagnose root causes of problems and determine appropriate causes of action.

Lack of grounding in scientific research

One of the most damning criticisms levelled at CBT (generally from academics) has been that its principles are not based on any scientific research. Scholars such as Kaye (1992) believe that in identifying the importance of certain competencies like personal and interpersonal competence and language communication competence, the advice of specialist scholars with 'decades' of experience and scientific understanding of communication theory and research

had not been sought. Kaye questions some of the premises made by the bureaucrats, industry and union representatives and politicians who were consulted by Finn (1991) and Mayer (1992). Indeed he goes so far as to claim:

> *There is good reason therefore, to be concerned about the promulgation, by bureaucrats and other non-scientifically oriented influence groups, of outmoded and invalid conceptions of communication competence as a key area.*
>
> (Kaye 1992, p.127)

Kaye was not only concerned about the failure of Finn and Mayer to consult scholars in the area of communication competence. He was also concerned about the mechanisms put in place by bureaucrats and educational policy-makers to ensure the professional competence of vocational teachers, and the conclusions by Predl (cited in Kaye 1992). The Predl report emphasised the minimum technical competencies to be achieved by vocational teachers. It also suggested that the initial training of vocational teachers need not be lengthy. Kaye believes that in suggesting a truncated period for initial teacher training Predl was actually advocating a return to pre-award days when vocational teachers were not required to undergo the extended periods of training as required by many Bachelor of Teaching courses. Kaye concludes that perhaps Predl 'was trying to justify reductions to expenditure on vocational teacher education' rather than improve 'educational quality or excellence' of teacher training (p.127).

Stevenson (1992) is especially critical of the value of CBT to students, workplaces and society. He argues that a CBT system is in major part 'concerned with performance, efficiency, modernisation, moulding, instruction and improving production'. To this extent he believes that:

> *there is no room to overcome meaninglessness, barbarism or oppression; no room to emphasise growth, initiation into new forms of knowing or empowerment; no room for the educator to see the primary role as one of support, conversation or conscientisation; no room for such goals as wholeness, ability to make judgements or ability to take action to improve or transform society; and no consideration of such values as acceptance of others, reason or freedom.*
>
> (Stevenson 1992, p.216)

Furthermore, Stevenson is not convinced that the CBT paradigm has the capacity to develop the skilled and flexible workforce required by modern workplaces, or to improve the competitiveness of Australian industry in global markets. In this respect he is also supported by Billett et al. (1999). This is because CBT is focussed more on attributes which can be demonstrated and

measured rather than on the learning processes or cognitive structures required to develop these attributes. This also means that it ignores the need for students to achieve the 'deep learning' they will require to be able to develop a 'conceptual understanding' of their workplace which will enable them to assert more control of their working environments (Ryan 1997, p.22).

Other problems envisaged by the critics of CBT relate to the assumption that generic competencies actually exist; that is, that they can be easily transferred to different contexts when they are required. Hager (1993) and Misko (1995) refer to the literature on the development of expertise to show that 'high levels of competence' (Hager 1993, p.97) are based on extensive context-specific knowledge.

A method of control

Robinson (1993) reveals findings from a study of teachers which suggest that CBT can be viewed as a method for controlling students and teachers. Self-paced learning was perceived to isolate students from the group. This in turn made them more manageable. The maintenance of extensive records of their performance also made students more 'visible'. CBT also altered teachers' traditional ways of working and made them anxious about their ability to deliver training according to CBT imperatives. This increased their feelings of powerlessness (Robinson 1993).

The controlling influence of industry in the emergence and development of CBT is also a concern for Ryan (1997). This control, which had formerly manifested itself in regulating the time-serving requirements of apprentices, was now being exerted in new, more prescriptive ways. Ryan believes that vocational educators had initially welcomed CBT as a way of ending this 'inappropriate intrusion' (p.21) into the way they planned their courses. However, they were to find that CBT did not end the influence of industry over the way that training was conceived and delivered. According to Ryan: 'It turned out that the industrial relations system was ... increasing its control by asserting the right to dictate in minute detail the essentials of curriculum design and teaching and learning processes'. This, according to Ryan, was done in the apparent but mistaken belief 'that it had never previously occurred to TAFE educators that the training they offered should have something to do with the occupations their students would follow' (p.21).

Stevenson (1995) also believes that CBT exhibits features of control. Apart from the controlling effects of training bureaucracies and political imperatives associated with the introduction, implementation and monitoring of CBT, Stevenson believes that the expansion of the original NTB concept of competence to include cognitive structures like knowledge, values and understanding represents its colonisation of cognitive concepts of competence. This means that the NTB has taken control of another domain of knowledge for its own benefit.

A fragmented approach to training and learning

The behaviourist, outcomes-based and individualised approach to the delivery of training, and the development of elementary and complex skills, promoted by CBT, have also been criticised for ignoring the interrelated social, personal and cognitive or intellectual aspects of skills acquisition (Blunden 1996). Hager (1993), in supporting this view, notes the weakness of an approach which does not understand the connections between tasks, and the subsequent transformation of these into new and expanded entities. He objects to the reduction of an occupation into a 'series of discrete observable' tasks which he believes presents a shallow portrayal of an occupation and will lead to invalid assessments. To deal with this fragmentation, Hager advocated a system of integrated competency standards which would take these connections into account.

Cornford (1997b) observes that a modularised approach to training requires students to acquire skills and knowledge in relatively short periods of time (p.245). Drawing on the work of Weinstein and Mayer, Cornford also argues that designers of modular courses may be basing their strategies on uninformed views of the way that students learn. Students need time for practising skills and developing an understanding of relevant theory. Repeated practice and recall of information can then help them to store information in long-term memory. The need for repeated practice and time to develop context-specific knowledge is also acknowledged in research studies reviewed by Misko (1995).

According to Ryan (1997), there are other concerns associated with adopting a CBT approach in vocational education. These relate to the mistaken assumption that the education of vocational students needs to be viewed as a series of discrete steps, and that opportunities for reflection or synthesis are not

required. Ryan is also concerned with the notion that only minimum standards of performance need to be met.

That CBT does not encourage a 'holistic' assessment of competence has also been identified by Billett et al. (1999) in their comprehensive study of the impact of CBT on teachers, enterprises, industry agencies and government authorities in the hospitality and metals industries. According to these researchers the lack of emphasis on the theory and knowledge which underlies, and is associated with, specific skills, and the integration of knowledge and skills from different contexts, promotes an incomplete assessment of competence. This they believe does not help to achieve the main CBT goal of providing skilled and adaptable workers for Australian industry.

Billet et al. (1999), drawing from studies by McKavanagh and Stevenson, and Collins, Brown and Newman, and Billett, believe that CBT, with its emphasis on outcomes rather than process, and its focus on individual learning, fails to acknowledge a view of learning in which students are seen to develop knowledge and skill through active problem-solving with peers and experts in the field.

The German system for vocational training, often praised for its forward-thinking approach, has not adopted a modularised approach to curriculum development. Zedler (1996) reports that, in rejecting the use of modularisation of vocational training, the leading organisations of German industry made the following evaluation:

> *One of the essential foundations of the training system is the concept of the profession which cannot rationally be replaced by a modular concept. The concept of profession ensures that training is something more than the juxtaposition of individual qualifications. On the basis of nationwide universally applicable and uniform training regulations drawn up with the participation of the companies, the young person acquires a comprehensive professional qualification which ensures professional proficiency and flexibility between different occupations and mobility between different companies and sectors.*
>
> (Zedler 1996, p.21)

A misinformed view of workplaces

More recently, Mulcahy and James (1999) report on studies by Childs and Wagner which provide evidence of dissonance between how the competency standards are constructed and what happens within enterprises. This was

especially true for owners of small businesses who were of the opinion that their core business knowledge was market-sensitive information. The inability of competency standards to deal effectively with local knowledge was also another problem.

That CBT does not fully acknowledge the way in which working and learning occurs in real workplaces is highlighted by Field (1996) in his analysis of the tensions between CBT processes and requirements for organisational learning. Field bases his argument on the premise that the majority of workplaces work in 'turbulent and unpredictable environments' (p.24) and must respond to changes in the marketplace with flexibility and speed if they are to survive. Field believes that in focussing too much on detailed minimal prescriptions of the way certain skills are to be carried out, CBT ignores crucial aspects of organisational survival, like innovative ways for bringing about improvements derived from critical questioning of customary processes.

However, Guthrie (1993) believes that this critical reflection is not precluded under a CBT system. He is of the opinion that the implementation of CBT without critical reflection or understanding may lead to the adoption of techniques of training and assessment that could discredit the intentions of the system. He pleads for the acknowledgment of the intangible dimensions that underpin competent performance and for creative ways to assess the performance required by the competency standards.

The difficulties of guaranteeing valid and reliable assessment

That CBT has difficulties in guaranteeing that workplace- or college-based assessments will be reliable and valid is supported by the findings of Billett et al. (1999) in their discussions with, and surveys of, teachers, and discussions with industry training advisory bodies (ITABs) and enterprises. In this study teachers reported that because of the increased demand for assessment events and the need to develop a large number of tests for re-test situations, assessment items were often designed quickly. This meant that it was not always possible to ensure that items were sufficiently discriminating. In addition, access to computer-based assessments did not necessarily limit the amount of student collaboration. Because assessments were directly related to standards, they often did not allow for tests of personality or commonsense skills. This means that CBT promoted an 'overemphasis of skill components at the expense of a broader knowledge base' (p.108).

Cornford (1997b) also has concerns about the ability of CBT to deliver valid and reliable judgements when these are focussed on performance in one test at the end of a module. This, he believes, is especially problematic when students have not had the benefits of extended practice and constructive feedback.

Paterson (1998) also points to the lack of valid and reliable assessment mechanisms in addition to the lack of skilled personnel for providing workplace assessment. In their evaluation of CBT in action, Billett et al. (1999) found that there were discrepancies in the way different workplaces assessed performance in the same occupation. They claimed that what may comprise successful performance in one workplace may not be so judged in another workplace. This led them to conclude that the implementation of national competency standards together with the training efforts required to realise those standards did not appear to be leading to the achievement of the requisite adaptable workforce and skills required by employers.

The difficulties of guaranteeing reliable and valid assessments were ascribed by teachers in Billet et al.'s (1999) study to the fact that under CBT the opportunities for a system of moderation had not been explored. Further opportunities for teachers within and across State boundaries to meet in formal discussions about assessment issues had also been limited by the focus on open markets and competition.

Empirical studies evaluating the effectiveness of competency-based assessment processes currently in use have been few. Gillis and Bateman (1999) are of the opinion that assessors generally use those methods that are most familiar to them. In addition, they believe that issues of reliability and validity of assessment have not tended to guide the selection of assessment methods or the development of assessment guidelines in the training packages developed to date. They conclude that 'simplicity, ease of use and cost effectiveness' (p.7) have tended to be the major criteria. However, the ability of assessors to select evidence-gathering methods which are best able to deliver reliable and valid assessments is crucial to the success of CBT.

Advantages and benefits of CBT

A nationally co-ordinated approach to training

Paterson (1998) is of the view that there are definite strengths associated with CBT, as promulgated in the new National Training Framework. It has allowed

the 'gradual co-ordination' of competency standards with qualifications. This he believes establishes them as the 'primary currency in skill recognition' (p.7). The establishment of nationally agreed objectives by 'high level representation' of government agencies, employers, and employees, and the formation of a single body to oversee the endorsement of standards, the recognition of qualifications, and the monitoring of quality assurance are also perceived as major strengths.

According to Thomson (1995), competency standards provide definite benefits for employers, workers and trainers. They are a clear and public statement of what is expected of workers, are accessible to everyone, and because they are developed and reviewed in consultation with industry, they are relevant to industry and enterprise needs. Nationally endorsed competency standards mean that workers will be recognised for their competencies however they are attained, and employers can be confident that the national standard has been achieved.

However, when Billett et al. (1999) investigated the practical realities of achieving uniformity across State boundaries, they found that teachers believed that it had not occurred to any great extent. This was because it was difficult to ensure that everyone was interpreting the standards in the same way. Furthermore, different resource materials for delivering the standards meant varying interpretations of the importance of the various standards. Uniformity was also difficult because different workplaces had different standards of performance. This was especially the case in the hospitality industry.

A client-focussed system

Rushbrook (1997) reports the perspective of educators who advocated CBT. These educators emphasise the obligation for VET to meet the needs of employers by providing students with the essential skills required for adapting to changed workplace requirements and thus for their eventual survival in the workplace. Rushbrook's proponents of CBT also believe that it is a more empowering form of training and learning. Teachers are also empowered by the opportunities to develop skills required for working with individual students rather than with class groups. Students are empowered by deciding when, where and how they will undertake their learning. By allowing students to self-pace their studies, non-achieving students are able to take the time to develop competencies which they otherwise would not develop in a traditional classroom. Benefits such as these were also reported by teachers in a study

undertaken by Misko (1999 in press) of the effects of different modes of delivery.

CBT was envisioned as a vehicle for meeting enterprise and industry needs. When Billet et al. (1999) asked students, teachers and representatives of enterprises and industry whether CBT had delivered the skills enterprises required, the majority of respondents in all groups claimed that it had done so. Students indicated that their skills had diversified and that they were now multi-skilled. Teachers claimed that the competence of students had increased.

Self-contained units of learning

Although not a proponent of a modularised approach to training, Cornford (1997b) draws on studies by Finch and Crunkilton , Vickers, and Ainley to demonstrate advantages available under a modularised approach to training and learning. For example, CBT provides an opportunity for teachers to assess competence before moving onto a subsequent stage or module in a course. When students have not achieved competence in a unit, they can repeat the particular unit without having to repeat units they have already satisfactorily completed. Advantages are also seen in increased flexibility in timetabling, and improved mechanisms for addressing client needs, and updating courses. This last feature is especially important in this era of rapid technological change. Short self-contained modules also allow students to undertake training to suit other commitments in their lives. In addition, training providers can move quickly to design modules for short courses which are meant to meet a specific employer need.

Building blocks for subsequent courses

Cornford (1997b) gives an example of how a current course in the New South Wales Certificate IV course in Professional Cookery (Patisserie) provides opportunities for students to revisit and review skills and knowledge presented in prior modules. Cornford argues that it is the careful initial analysis of the skills required, and effective sequencing of skills in terms of introducing foundation skills and knowledge before more complex skills, which has allowed knowledge and skill in initial modules to be 'repeated and integrated, and reassessed in subsequent modules' (p.249).

A survival package for Australian industry

Advocates of CBT reject claims that training reform processes, which include CBT, were initiated because of the heavy hand of union officials, industry bosses, or government bureaucrats. They assert that the introduction of CBT into the vocational education landscape was based on the need for Australian industry, and especially that of manufacturing, to compete more effectively. In view of reduced protectionism at home, faster rates of technological change, and increased competition from international competitors in local and global markets, CBT should be seen as a mechanism for economic survival.

Van Berkel (1997), in a debate with Robin Ryan about whether or not Australia needed CBT, referred to these changes in the economic environment as spelling the end of the 'good old days' when educators had the time to be more 'purist in pursuits and attitudes' to training delivery and learning. What was required today, claimed Van Berkel, was a training system which would help industry respond to rapid technological change and customer needs. CBT was seen as the vehicle for delivering these responses.

Implementing CBT

Practical uptake of CBT

THE IMPLEMENTATION OF CBT in Australia has been slow. The original intention of the ministers for vocational education and training (MOVEET) was for CBT to be substantially in place by December 1993. This did not eventuate. In 1994, the Allen Consulting Group reported to ANTA that 'the potential for competency-based training had not been fully realised either in workplaces or in training institutions despite a huge investment of time, effort and money from enterprises, employer associations, unions and training providers' (Allen Consulting 1994, p.43).

A study investigating teacher perceptions of their future and current roles under the new system found that the implementation of change among colleges was highly variable. What was considered 'futuristic policy' (Chant, Link & Associates 1992, p.1) to some, was considered to be common practice for others. This study also found that teachers were highly critical about the way the broad reforms were implemented. They were especially concerned about the lack of promotion of the new reforms, and the lack of time provided for teachers to become sufficiently familiar with the changes, and with new syllabi and with new ways of delivery of instruction. Teachers believed that they required training in implementing CBT in their classrooms.

This study also found that there was great variability in the extent to which teachers had implemented flexible delivery modes, recognition of prior learning, or developed packages for flexible delivery.

This is supported by Smith (1997a) reporting on a study which set out to investigate the extent of CBT implementation by public and private providers of VET. The findings showed that by 1994, the implementation of CBT was still at a low level, with just under a third of TAFE courses and well over a third of

non-TAFE courses meeting the basic definition of CBT. Smith (1997b), reporting on another study which investigated the implementation of CBT, found that the three features of CBT that were least implemented were assessment in the workplace, flexible entry and exit points and assessment on demand. For example, office administration courses with their emphasis on computer skills could readily adopt self-pacing and assessment on demand. However, these were seldom used for school-leavers and students in labour market programs. Building courses could not implement flexible entry and exit points because, in many instances, large building projects had to be completed in teams.

Courses at the higher AQF levels were found by Lowrie et al. (1999) to be the least likely to have content written up according to CBT guidelines. In addition, this study noted that CBT was found to be most difficult in terms of the implementation of processes for flexible exit and entry points and assessment on demand.

A study of the impact of training reform on 449 senior and middle managers in TAFE institutes by Lundberg (1996) also found that the implementation of competency-based training and assessment had been slow. Reasons included inadequate staff development and difficulties of acceptance of the new forms of assessment.

Foyster (1997) reporting on an ANTA survey of employers showed that not even a half of the group of employers with recent VET graduates had heard of CBT. On the basis of these figures, he claims that it is reasonable to expect that those employers without recent VET graduates would be less likely to have heard of it.

The uptake of CBT among classroom teachers, trainers and heads of departments who had come into contact with CBT as practitioners was investigated in a recent study of four TAFE institutes and four industry training centres by Harper (1997). In this study, practitioners were interviewed three times at three-to-five-month intervals to test their knowledge of CBT and to monitor any changes in that knowledge over time. The findings showed that participants had a basic and similar understanding of CBT. However, heads of departments were more informed about the overall aims of the approach, while classroom teachers were more concerned with the day-to-day applications. Industry trainers were the least informed. They had what Harper calls a 'simplistic and less questioning' concept of CBT. Knowledge of the

training reform agenda was poor. All participants were unaware of the major principles which distinguished CBT from other forms of training practices, or the expanded definition of skills. Well under half (44.4%) of the participants understood the concept of the Mayer competencies but could not recite any. Only four out of the 27 participants knew that the terms key competencies and Mayer competencies referred to the same things. Just over a third (37.0%) could provide a basic description of the Mayer competencies. When participants were asked whether self-paced delivery was CBT by another name, only seven of the 27 (24.1%) participants were able to provide the correct answer. Over half (51.7%) of the group replied that it was the same; the remainder were unsure but believed that it may have been the same.

Harper also discovered further evidence of the non-implementation of CBT when he asked whether or not participants were using the handbooks on CBT as texts. However, there had also been some positive changes in the way teachers approached their work. They reported that they had increasingly taken on a facilitator role dealing with students on an individual basis or in small groups. They also reported that the teachers who had wished to continue teaching using traditional methods of delivery had either left the system or moved to another department or college. Harper concluded that, although such changes could be attributed to the part-implementation of certain aspects of CBT, there was little evidence that the system that had been imagined by Finn, Mayer and Carmichael had been put into practice.

The difficulties teachers experienced in the uptake of CBT have been related to insufficient and inappropriate staff development (Lundberg 1996; Smith 1997a; Lowrie et al. 1999), and the simultaneous introduction of other aspects of training reform which threatened teachers' sense of employment security. These included the move to open the VET training market, to restructure TAFE systems and to develop networks with business and industry. These concerns seem to have reappeared among instructors with the introduction of training packages (Lowrie et al. 1999).

That CBT is not being implemented in all areas of the training system has also been reported in an interview study of lecturers and department heads conducted by Rushbrook (1997). For example, there are some departments in the creative arts which have ignored the implementation of CBT on philosophical and practical grounds. CBT's emphasis on uniform standards of performance is seen to be in direct opposition to the needs of workplaces

whose main goal is to produce unique and novel products or services. This is especially the case in the dramatic arts.

In other cases, educators go about their business using the experience that has delivered positive outcomes in the past, seemingly complying with CBT requirements but in reality 'practising subversion or aversion' (Rushbrook 1997, p.101). These educators do not believe that 'text-based reality' fits in with their notion of developing the understanding and skills of novices; rather, they believe that competence is developed when learners are guided through their learning by an expert who understands and has an appreciation of the trade. There is a general objection to the elevation of CBT over other tried and successful methods of training.

Harris et al. (1995) report on an evaluation of the Scottish National Certificate course which found that the system had been successful. It provided a 'unified, coherent and flexible' system of training. However, the provision of training in the transferable skills like problem-solving, communication, interpersonal skills, numeracy and information technology was less successful. The report found that a major feature of this success was the preparation of teachers to implement the changes.

Increasing acceptance of CBT

That there is increasing acceptance of CBT in TAFE and non-TAFE providers has been further highlighted by the Lowrie et al. study already mentioned. This comprehensive study of instructors in TAFE and non-TAFE systems found that CBT was generally accepted in the VET sectors. However, there was stronger acceptance of CBT by teachers in skills-based courses and in areas which had a closer connection to industry. It was also more highly apparent among teachers in the private provider sector than those in the public provider sector.

Teachers in this study also reported being relatively satisfied with their level of understanding of CBT. However, they were less satisfied with their ability to implement some of the major features of CBT. This was particularly the case for competency-based assessment and recognition of prior learning. Lowrie et al. (1999) report that concerns experienced by teachers in the early days of CBT are re-emerging with the introduction of training packages. However, acceptance of training packages was also found to be higher among teachers in the private provider sector.

Increased work-based delivery

The implementation of CBT has seen a significant increase in the use of actual workplaces and simulated contexts for the delivery and assessment of training. This has been especially noticed in the metals and hospitality industries (Billett et al. 1999). Flexibility to enable enterprises to develop their specific standards has often meant that training providers have gone into work sites to work with enterprises to develop or conduct training and assessment practices. The move to increase the authenticity of training has also resulted in increased opportunities for students to develop skills in using machinery and equipment or dealing with customers in workplaces. It has also promoted the use of simulated contexts like college restaurants.

National industry standards

The development of industry standards has also progressed at a slow rate. Where the intention was for 90 per cent of the workforce to be covered by industry competency standards by the end of 1995, the actual figure turned out to be only 56 per cent (Harris et al. 1995). However, Paterson (1998) believes that between 1990 and 1995 over 300 individual sets of competency standards were developed to cover about three-quarters of the Australian workforce. By January 1997, over 78 per cent of Australian industry were covered by competency standards (Smith & Keating 1997).

Issues in competency-based assessment

Low uptake of RPL

The cornerstone of CBT is the assessment process. This process includes the recognition of prior learning, or current competency and assessment based on performance of skills according to standards. Numerous studies have investigated the extent and quality of the implementation of competency-based assessment (CBA). Bateman (1998) reported findings by the Moreland Group in Victoria which showed that RPL processes, although widely available across providers, were being seldom used. Instead, the more customary training pathways to qualifications and recognition were being followed. The Moreland Group concluded that this was due to the strong influence of a training delivery culture, and the lack of awareness of the benefits of assessment as a pathway to qualifications and recognition. The Moreland

Group advocated the setting-up of a number of assessment centres whose role would be to provide assessment services to Victorian industries and enterprises, and to promote an 'assessment culture' and to provide advice for the development of assessment policy.

The Lowrie et al. study also found that teachers were not fully satisfied with their ability to implement assessment processes which included assessment on demand and RPL.

Setting up assessment-only RTOs

The establishment of an RTO assessment-only centre is described by Bateman (1998) who was herself involved in the process. She describes a number of problems experienced during the four-month trial. Because not all assessors had formal recognition of technical trade competencies, the centre had to initiate a process for the recognition of current technical competencies. Furthermore, the centre found that assessors who had the required technical qualifications did not always have the communication or interpersonal skills to carry out assessment processes effectively. Neither did they have the ability to design instruments or tools or collect information upon which to make judgements. The development of mechanisms for the costing of the delivery of the assessment services, and establishing and maintaining quality assurance were also issues requiring resolution. Bateman concluded that the success of such assessment centres would depend on the extent to which they could make assessment-only activity accessible and cost-effective to individuals, enterprises and small business.

Re-testing practices

According to Billett et al. (1999), the main change resulting from CBT was that students could be re-tested on multiple occasions in order to demonstrate their competence. In dealing with the practicalities of providing frequent assessments according to student demand, teachers in the Billet et al. study found that their time was being increasingly taken up with assessment rather than with assisting students to learn. This led to some teachers implementing policies which regulated the number of tests students were able to take to demonstrate their competence. However, these teachers also perceived there to be a lack of uniformity in the number of re-tests that could be taken, and less adherence by students to deadlines.

Introducing graded competencies or levels of performance

Concerns have been raised by teachers about the demotivating effects on students produced by a non-graded system of assessment (Dickson & Bloch 1998; Billett et al. 1999; Robinson 1993; Thomson et al. 1996; Smith 1997b; Lundberg 1996). Dickson and Bloch surveyed opinions of the benefits of graded competencies. They found that ITABs generally supported a graded system, reflecting a strong move within their industries to provide evidence of different levels of performance. In addition, responding ITABs believed that many employers wanted information which would provide a better indication of 'how good an individual was at a particular skill' (Dickson & Bloch 1998, p.23). They reported instances where employers preferred to select workers on percentage grades. Teachers, trainers and assessors believed that a system of graded competencies would improve motivation levels in students and especially those of high achievers. These findings are also supported by Smith (1997b).

Billet et al.'s survey of teachers, representatives of industry and enterprises, and students involved in the metals and hospitality industries in two States found that teachers, high-achieving students and employers believed in the de-motivating effects of non-graded assessments. Moreover, grading was preferred by all groups because it was seen 'as an easy to interpret system that provided a simple overview of achievement and a way for rewarding effort' (p.94). However, some advantages to non-graded systems were also identified by teachers. These related to the recognition of completion of work by low-achieving students.

Quirk (1995a) is of the opinion that a CBT system does not preclude the administration of a differentiated grading system. Quirk (1995b) also conducted a survey on this issue for the NSW TAFE Commission. Administrators in the NSW Training Division, teachers employed by private and public training providers, NSW ITABs, enterprises in industry, and government agencies participated in the study either through questionnaires, focus groups or interviews. This survey found that there was a general acceptance of the notion that levels of performance and grades could co-exist with the principles of competency-based assessment. However, there were some areas of resistance to this form of reporting on the achievement of competency because of its perceived incongruence with the notion of competence promulgated under CBT.

Lundberg (1996) found that TAFE senior and middle managers were especially concerned about assessment issues. These largely related to developing appropriate mechanisms for reporting assessments to employers, and the 'de-motivating' effects on students of non-graded performance assessments.

Assessment for special groups

Misko and Saunders (1995) examined the implementation of CBA for special groups in the workplace. They paid particular attention to casual and part-time workers and those from non-English-speaking backgrounds. They conducted interviews with representatives from 39 organisations in ten major industries. These included those from government agencies, union officials, and enterprises in the automotive, food production and processing, mining, energy, construction, hospitality and tourism, electrical/electronics, security and cleaning, financial services, health services, and engineering industries. Their findings showed a limited implementation of CBA in workplaces. This is not to say that some workplaces were not appraising the skills of their staff in some way. What were being used were either formal or informal systems for appraising performance based on the observations of managers. There were of course instances where companies had no assessment or appraisal processes in place.

Misko and Saunders found that even in industries with well-developed systems for assessing skills for workers and non-workers like the hospitality and tourism industry, the uptake of CBA processes had been low. For example, there were 5466 registrations across all States and Territories between February 1994 and February 1995. This comprised registrations for single or multiple assessments. Keeping in mind that in South Australia alone there were 35 000 employees in the industry, two-thirds of whom were in part-time or casual employment, it is evident that only a small percentage of employees and their employers were making use of the program. The major reasons given for not implementing CBA related to the cost and time required for developing appropriate resources.

In addition, union representatives in industries dependent on subcontractors, such as the building industry, were of the firm opinion that it was unlikely that these employers would implement CBA unless it was either mandatory or they were provided with a monetary subsidy.

The assessment of part-time or casual workers who did not work regular shifts was considered to be problematic for employers and employees alike. The general finding was that casual workers are seldom provided opportunities for assessment. This was not only because employers do not want to assess the skills of workers who may only be with them for a short period of time but also because casual workers are brought in during busy periods when production tasks take priority over all other functions. In this scenario there is no time in which to carry out assessment. In addition, casual workers may not be aware that CBA is available to them, or they may feel apprehensive about the real meaning behind assessment.

However, Misko and Saunders found that there were cases where hoteliers who had embraced the program found that formally assessing workers for current competencies, paying them accordingly and providing further training opportunities had produced benefits. Employees were more motivated, did better work and incurred less wastage.

Obtaining uniformity of standards

Teachers in the Billet et al. study indicated that it was difficult to achieve uniformity in the implementation of standards within programs and across State boundaries. This was perceived to be the result of differential interpretation of the standards by teachers and the use of different resource materials for instruction. Because workloads had increased under CBT and because there was an increased use in contract and sessional teachers, teachers in the Billet et al. study believed that their ability to meet with their colleagues in formal discussions about assessment issues had been severely limited. Moreover, the opportunities for teachers to meet with other teachers from different providers or in different States were further limited by the national emphasis on competition between providers.

Reduced reliance on professional judgements

In a small-scale interview and observational study of teachers in five trade-related areas, Robinson (1993) found that teachers were concerned that professional judgement was no longer to play a significant part in assessing competent performance under CBA since it now involved step-by-step checking of individual tasks rather than a holistic assessment of finished products. This was especially the case in areas like commercial cookery and fashion where a teacher's professional judgement of competence of a finished

product had been crucial in deciding whether or not a student was to be assessed as competent.

These issues were also reported by Billett et al. (1999) in a much larger study. They found that teachers believed that because CBT was centred on prescribed measures of performance, there was less capacity for them to use their professional judgements. In addition, this changed their teaching practices and the relationship they had with students. The focus on text-based and self-paced materials also meant that there were little opportunities for teachers and students to come together in the learning process. However, Billett et al. also acknowledged that changes in CBT brought about by the new focus on training packages as the reference point for training may see teachers being more involved in customising requirements to local enterprises.

The Billet et al. study found that teachers believed that if CBT were to be successful, there would have to be a renewed focus on the teaching and learning strategies that needed to be put in place to achieve the outcomes prescribed by the standards. These meant increasing the diversity of practical, cognitive and social experiences available to students during skills acquisition, and understanding and being responsive to individual differences in terms of student ability and learning preferences.

Customising the implementation of CBT

Smith and Lowrie (1997) report on a study of teachers and trainers conducted by them in 1996, which also investigated how teachers were implementing CBA. The findings showed that teachers were concerned about the increased time it took to conduct assessments and that the assessments might not always provide a true indication of what students could do. To ensure more reliable assessments, and to reduce the amount of class time spent on assessments, teachers had implemented a range of assessment alternatives. These included the setting-up of specialist assessment laboratories, the administration of multiple assessments across different contexts for the same competency and the combining of assessments across learning outcomes within and across modules.

Teachers were also concerned with the excessive workloads associated with assessing RPL and maintaining records for self-paced module results. Arrangements for dealing with these concerns included increasing

requirements for applicants to complete detailed application forms for RPL and copies of certificates for credit transfer, and appointing RPL specialists and administrative staff to deal with the maintenance of records.

Teachers were also unhappy with the practice of allowing students repeated opportunities to sit assessment events in which they had not achieved competencies. They believed that this could lead to students being deemed competent when they were not 'truly' competent. To deal with these concerns, providers had implemented stricter policies on the numbers of times students were able to re-sit an assessment and varying the tools for these assessments.

The perspective of students

Problems with self-paced learning

UNDER CBT, STUDENTS have been expected to take more control and responsibility for their learning in terms of preparing themselves to meet assessment requirements. According to Billet et al. (1999), this has led to reduced forms of student-teacher interaction and a different and more 'limited concept' of the teacher role (p.14). A naturalistic study of two groups of female students in a CBT course in office administration, undertaken in two sites by James and Coleman (1998), discovered important differences in the ways that students adapted to the CBT format. These researchers observed students in practical training sessions on four separate occasions for an average period of two hours. They also interviewed students in private for between 40 and 60 minutes. Their findings showed that although students were provided with a statement of outcomes and timeframes at the beginning of the module, almost all of them paid scant attention to these as planning tools. Indeed, the researchers found that some students believed that these outcomes were for the benefit of teachers. In addition, students in both sites did not favour teamwork, even though they consulted frequently with their peers in the solving of individual problems.

Site 1 students were motivated to perform complete tests and obtain good grades. James and Coleman described this as a 'short-term pragmatic' (p.412) view of learning where achieving high grades was more important than the development of understanding. These students were judged as having adapted 'reasonably well' to the self-paced mode of study as practised in the group. However, this view of self-pacing involved frequent consultations with other students and requests for teacher support.

Although the successful adjustment to self-paced learning was less evident in Site 2, the short-term and pragmatic approach to learning was still evident.

Students in this site still aspired to achieving good grades with minimum effort, but where students in Site 1 were more confident in their ability to self-pace their studies and solve problems, students in Site 2 were far more dependent on teacher support and the support of other students in the group. Indeed, they may have believed that leaving students to work on their own was an abnegation of the teacher's responsibility. When the researchers observed the performance of Site 2 students in assessment events, there was also little evidence of their obeying instructions for individual work, despite requirements and teacher requests for no collaboration or requests for assistance. However, these requirements were 'unenforceable' and students continued to share solutions.

Witnessing the dependence on others of Site 2 students, even in times where they should be working independently, led James and Coleman to assert that the implementation of CBT had not developed students into self-directed and independent learners. In fact, according to the teacher at this site, most students became 'more dependent if anything' (p.416). However, it must also be acknowledged that the majority of Site 2 students also exhibited behaviours associated with low achievement. They were often inattentive, absent, lacked confidence and required step-by-step assistance.

Difficulties with the self-paced learning that is required in distance education were also reported by Misko (1999 in press) in her study of 769 students studying via traditional and flexible delivery methods. The most common disadvantage identified by flexible delivery students was the need for students to discipline themselves to get their work completed; time pressures created by other commitments were also seen as a disadvantage in this mode.

Improved skills

Billett et al.'s (1999) survey of 279 students in the metals and hospitality industries in Queensland and Victoria showed that students generally believed that their training had enhanced their ability to solve problems and apply their knowledge and understanding to other contexts—namely, the workplace and the home. A minority of students reported that the training had not been helpful in these ways. This was related to the narrowness of what was taught in the classroom and the fact that the skill was not being used or was not relevant to the workplace.

An evaluation was also conducted in Northern Ireland of a program using the National Vocational Qualifications CBT approach for part-time youth workers (McRoberts & Leitch 1998). At the end of the training program, 128 students completed a questionnaire survey. Six months after the completion of their studies, a random sample of these students and their supervisors was interviewed. Findings from the survey showed that almost all of the students in the program rated the program as good to excellent. Well over three-quarters of the group indicated that there was an appropriate balance of theory and practice, and all but three students would recommend the program to others. Over 80 per cent of the trainees believed that although the assessment processes were challenging, they were able to manage them. The most stressful aspects of the program for those who indicated they would not recommend the program to others were the processes of collecting evidence and undergoing assessments. Preparing a portfolio for assessment was also seen as challenging but manageable by almost three-quarters of the group. Support received from tutors, assessors and supervisors also received favourable ratings from students, with the great majority of students providing good to excellent evaluations.

The most significant aspect of the program, frequently cited by just under a half of the respondents, was the sharing and learning from others in group-based activities and, particularly, in group discussions. This was followed by the learning and support students received from tutors, which in turn was followed by the residential experience students had undergone during the program. Improving knowledge and getting new ideas was reported as significant by just over a third of the group. Other significant, but not as frequently reported, aspects related to enjoyment and satisfaction, program organisation and course content, practical work during course sessions, increased confidence in the youth worker role and skills development.

In their interviews conducted six months after the completion of the program, students reported that they had been able to become more effective in their roles as a result of the program. Trainees believed that their confidence had been increased because of their participation in the program. They were able to initiate and take responsibility for new activities; they had become more informed about youth work and more assertive and articulate in their interactions with colleagues. They had also become more respected and credible to the young people they worked with. This behaviour was also independently corroborated by their supervisors.

Trainees also reported being more organised in their work, more systematic in the maintenance of records and other forms of documentation, and more skilled in communicating and working with their clients individually and in a group. In addition, they believed that their empathy for, and understanding of, young people resulted in greater acceptance and fewer confrontations.

The perspective of teachers and educators

THERE HAS BEEN a plethora of empirical studies in which teachers have been asked to evaluate the effectiveness of CBT. In the main, these studies have asked teachers to judge the appropriateness of the method for developing skills and knowledge in students.

Lack of adequate preparation

A Victorian study of teachers in 11 different TAFE colleges (Chant, Link & Associates 1992) found that teachers generally believed that they had not been provided with information of the reforms associated with CBT before they had been expected to implement it. In addition, the study found that teachers believed that their classroom teacher roles and traditional focus on courses and curriculum had been altered by the need to focus course activity on industry needs. The researchers found that teachers were more likely to be enthusiastic about the changes and their new roles when the college management itself had been enthusiastic about the changes and had communicated this enthusiasm to them. Teachers were also more likely to be accepting and enthusiastic of the changes in those cases where they had received sufficient information about the reforms, when they already had close connections with industry and well placed to adjust to the new role. This was especially the case with fee-for-service activities.

In the main, teachers had difficulty in identifying the major benefits of the changes. However, they reported benefits in terms of improved cost-efficiencies for the State, relevance to industry needs and meeting student needs. Nevertheless, they were also of the opinion that constant change was making their roles more difficult to predict. Teachers also believed that although the rewards for industry and society had been well communicated, there had been little emphasis on the positive rewards that could be expected by teachers.

The study also found general criticism of CBT. Teachers believed that there had been inadequate planning for its implementation and lack of time to become better acquainted with CBT practices. It was also seen as being more suited for practical skills courses like automotive and less easy to implement for subjects in the humanities areas, electronics, business and the creative arts. Teachers were also generally concerned that they would not be given adequate resources for implementing CBT in their classrooms until well after they had produced their own. However, teachers were generally accepting of RPL processes.

Teacher perceptions were also affected by their academic or trade backgrounds. Academic teachers considered trade teachers to be in a better position to alter their roles to suit future changes. This was because they perceived trade teachers to be acquainted with industry and, thus, more able to be accepting of the need for fee-for-service activities. They were also seen to have a 'training' focus rather than an 'education' focus.

Lack of adequate preparation for the implementation of CBT was also found to affect the extent to which CBT was accepted and understood by Lowrie et al. (1999).

Increased accountability

An independent study of teachers' knowledge and commitment towards current and future directions of the Victorian TAFE system (State Training Board of Victoria 1992) found that teachers believed that it was difficult to predict what was required of them in their 'emerging and future role' in a system undergoing constant change. In addition, many teachers were still not implementing CBT and often had received little information about it. Those who were using CBT did not feel that CBT was always suitable for all subjects. They were of the opinion that although it was appropriate for practical skills-based subjects, it was less appropriate for theory-based subjects. Assessment issues like RPL were found to be time-consuming and expensive to put in place. In addition, its claim to speed up student progress through programs was not always realised. The report also found that teachers had experienced an increase in duties not directly associated with teaching students, as well as reduced opportunities for formal discussions with departmental colleagues and administrators.

Dickson and Bloch (1998) surveyed 258 teachers, trainers and assessors on the perceived advantages and disadvantages of CBA. Less than half had been using the system for a period of three years or more. Benefits perceived by the teacher/trainer/assessor group included the provision of better feedback to students, reduced stress, increased flexibility and workplace relevance, and clear articulation of requirements.

The 279 teachers in Billett et al.'s (1999) study were also asked to reflect on the outcomes of CBT. The majority were unable to make a distinction between the impact of CBT and what Billett et al. called 'other associated reforms and social changes' (p.140), including award restructuring, decreased budgets, impact of technology, privatisation and outsourcing. This is understandable since, in many aspects, CBT is intrinsically connected to these reforms.

Teachers in this study provided positive and negative evaluations of CBT. Although teachers believed that more accountability for teachers and realistic learning experiences for students were increased under the CBT system, opportunities for 'holistic' learning or 'broad education' had decreased. In addition, they believed that their role in developing students in ways which were not merely tied to the achievement of standards had been neglected under CBT. This was especially evident by the reduced opportunities for them to help students to learn how to learn. Teachers also reported that the increased need for record-keeping brought about by flexible entry and exit points, self-paced delivery and multiple assessments had increased work loads and had taken them away from their primary role of helping students in their learning.

Furthermore, teachers involved in metropolitan and regional focus groups, also included in the study, reported that CBT had been good for the bright students but had disadvantaged those of lower ability. Concerns were also voiced about the reduction of skill and knowledge areas covered by CBT and the meaninglessness that can be promoted when a certain competency is broken down into minute details of performance.

Billet et al.'s study (1999) investigated the impact of CBT on developing adaptable and flexible workers in the metals and hospitality industries. CBT was perceived by teachers and trainers preparing students for these industries to have promoted closer relationships between enterprises and the ITABs which represented them, delivered better opportunities for multi-skilling and for improving student competence and workplace relevance of their training. It

was also perceived to have increased training provider responsiveness to enterprise and industry needs brought about by increased interaction. These needs were perceived also to have been met through the legislated implementation of uniform training requirements.

Customising CBT to local conditions

Smith and Lowrie (1997) report on a study of CBT in which they interviewed, in person and by telephone, teachers and trainers in business, engineering and building, and observed teaching and learning processes. These researchers found that the change to CBT had been difficult for teachers and trainers because it involved their making significant changes to the way they went about their daily work. However, all teachers and trainers had developed an acceptance that VET would be delivered under a CBT format.

These discussions with teachers showed that they had responded to the challenges posed by CBT in various ways. To help develop group cohesion and peer support in the face of increasing pressures to implement self-paced learning strategies, teachers had implemented different mechanisms for bringing students together at different stages during the course. To deal with the problems posed by allowing students to enrol and complete studies at any time, they had instituted mechanisms to reduce the number of times at which students could commence a course. To provide adequate access to available equipment, they had established systems for the rotation of specialised equipment or scheduled practical and theory sessions in the same time slot.

Materials also had been customised to suit local conditions where national modules were found to be irrelevant to local industry. Modules had been combined to provide a more coherent curriculum. Providers had increased the standard levels where it was found that the industry standards actually required lower levels of performance than were previously required.

Providers had also diversified the ways in which information was presented to students so that there was not always a dependency on completing written exercises in workbooks. The needs of students with poor literacy and numeracy skills were accommodated by decreasing their need to rely on written learning guides. Regular team meetings to discuss how best to implement CBT were also used. Where teachers were frustrated by the loss of their traditional instructional roles, mechanisms were established to allow

them to use these skills in certain aspects of the course. Limiting the number of courses for which teachers are expected to be responsible for during any given period allows them to provide better assistance and support to students.

Findings that instructors modified their implementation of CBT to suit local conditions and their subject areas were supported by further studies by Lowrie et al. (1999).

Studies by Cornford (1997a, 1997b) examined the extent to which vocational teachers in New South Wales believed that CBT approaches to training aided the attainment of the desired skill levels. They found that almost two-thirds of the teachers involved in both studies were very dissatisfied with the ability of a CBT framework to deliver the required skills. In addition, well over half of the teachers believed that the skills acquired by students were below standard. Teachers also believed that the CBT approach with its focus on module outcomes often led to students experiencing problems in later subjects and modules. This was because there was little chance for students to revise or review what had gone on in previous modules before a subsequent module was begun.

Inadequate resources for learning

Cornford (1997a) also surveyed 72 experienced vocational New South Wales teachers enrolled in the Bachelor of Teaching (Technical) degree who had taught or were currently teaching CBT modules in the traditional trades or in emerging occupations. The survey asked them to consider the pressures they felt to pass students under the new system, the adequacy of resources, the effectiveness of the modularised approach to training, types of assessment that were being used and the quality of the skills that were being produced. The findings showed that at least half of the teachers perceived there to be pressure from superiors to pass students in CBT subjects, with over a third perceiving these pressures to be from industry. In addition, about a third of responding teachers indicated concerns relating to the provision of adequate information, resources and equipment which would assist them to implement CBT effectively. Over two-thirds of the teachers indicated that they needed to assess students on an individual basis in their subject areas. Of these, almost all indicated that they received no assistance to help them with this task. In addition, over half of the group reported that it was difficult to deal effectively with student absences in cases where group testing was required. Over a third

of the group reported the same for the procedures dealing with students re-taking subjects or modules which they have not passed.

Concerns were also expressed by over one-third of the responding teachers about the lack of practice for students which would enable them to attain the levels of performance stated in the objectives. Over half of the group believed that there was not enough time available for teaching the relevant theory underpinning practical performance. While teachers seemed generally satisfied with the logical sequencing of the modules, about a quarter of them believed opportunities to integrate work from past and present modules to be either poor or very poor.

Other assessment concerns were also discovered by Cornford. Almost three-quarters of responding teachers reported problems with inconsistencies of assessment of standards by different teachers, and almost two-thirds indicated that CBT had hindered rather than improved effective skill attainment. There was also little support for a non-graded assessment process, with three-quarters of the teachers favouring the assessment of standards at different levels of performance.

Cornford concluded that teachers' perceptions of inadequate time, under a modularised approach to curriculum, for students to develop an understanding of relevant theory, or practise practical skills, was a cause for concern. Also problematic were teacher reports of encountering problems with students who had not developed in prior modules, an understanding of theory or mastery of practical skills which were required for subsequent modules. This was in spite of their having been assessed as competent in these prior modules. Cornford believes that even though such occurrences are also evident in other training systems, they are particularly problematic in a CBT system which provides certification to support the attainment of certain skills. These concern the value or worth of certificates which are perceived not to provide an authentic reflection of skills attained and the potential for the mounting of legal cases against training providers.

These problems are attributed to the lack of clear guidance in the competency paradigm as was currently being promulgated. He believes that the paradigm does not provide practical information on how to sequence and order content, or how to go about formative assessment. Cornford advocates a training system which takes its direction from theory and research grounded in cognitive psychology, skill learning and the development of expertise.

Reduced emphasis on educator role of teacher

Teachers have also experienced frustration in relation to what they perceive as their changed role under a CBT framework based on the implementation of national curriculum. A South Australian project examining the implementation of CBT in this State found that the move to develop national curricula increased the sense of dislocation felt by teachers when they were removed from the course design stage and separated from developing the materials that were to be used. This feeling of frustration was more heightened if teachers believed that the resource materials to be used (study guides, teacher guide-books and student workbooks) were deficient and not up to standard. Teacher frustrations with their perceived reduced role under CBT were also reported by Billett et al. (1999). They found that teachers felt that they were not only skilled in technical areas related to their teaching areas but also in the technology of teaching.

Teachers reported CBT benefits in terms of increased clarity of knowledge and skills that were to be covered in courses and the standards of performance that were to be accepted. CBT allowed greater interaction between industry and training providers.

The majority of their concerns related to CBT's de-motivating effects on students in terms of its non-graded approach to assessment and to ensuring reliable and valid assessments in workplaces or in the classroom.

Smith (1997a) reports that teachers believed that student safety in practical workshops was also harder to maintain when students were working on different machines at the same time.

A continuing role for curriculum

Concerns about reducing the importance of curriculum in a CBT system are voiced by Sobski (1998). Sobski claims that although the major advantage of CBT is its emphasis on clear and descriptive learning outcomes, its focus on outcomes may lead people to believe that there is no need for a 'strategic, structured and sequenced learning plan' (p.12) as is provided by curriculum. She supports this argument by directing our attention to the fact that most of the public funding for training packages is intended for the development of the endorsed rather than for the non-endorsed components. The endorsed

components describe the competency standards, guidelines for assessment, and the qualifications to be attained. The non-endorsed components comprise learning strategies, assessment resources and professional development materials.

In addition, Sobski believes that competency standards may not reflect the full range of skills and knowledge that are required for effective workplace performance. She claims that 'the reality is that there is less in the way of skills and knowledge specified in training packages than in existing courses' (p.14).

In supporting her claims for improving the visibility and importance of curriculum, Sobski refers to a survey of State and national ITABs. This survey revealed that ITABs accepted the continued use of curriculum to support the training packages. She also reports the findings of a recent ANTA study which showed that well over half of regular employer-users of TAFE did so in order to access accredited courses.

The theory of CBT proposes that it does not matter how skills are acquired. In this context Sobski concluded that if the claims made for CBT are to be regarded as credible, then it is also important to provide opportunities for individuals to acquire specific skills and knowledge through a variety of pathways including a structured learning plan—a curriculum.

Questionable outcomes

A study of a group of 82 teachers in commercial cookery, an area traditionally reliant on demonstrated performance, representing three-quarters of the teachers teaching selected modules in NSW TAFE, was conducted by Roux-Salembien and McDowell (1996). They found that well over half of those surveyed were dissatisfied with the way CBT was being implemented. In addition, about half did not believe that it improved student outcomes. About two-thirds of the group did not agree that CBT increased student motivation or allowed them to achieve their full potential. About the same number doubted that the assessment associated with CBT promoted excellence. These researchers also found that teachers believed that students preferred a graded form of assessment.

Billet et al. (1999) report that the content of what was taught in the classroom, apart from that required for standards-based assessments, was perceived by

the majority of teachers to have remained as it had been prior to CBT. For teachers, the major changes they experienced to their work practices were reduced involvement in determining what was to be taught and increased reliance on the use of self-paced delivery methods for skills development. This also required them to promote the importance of students taking responsibility for their own learning. Accordingly, teachers were not involved in developing and designing courses to the same extent and were more heavily involved in designing and administering mechanisms for appropriate record-keeping. Their concerns about the effectiveness of CBT were largely concerned with the reliability and validity of assessment processes and the de-motivating effects which undifferentiated levels of performance had on students' motivation.

The perspective of management

Legal safeguards

JACKSON (1992) FOUND that CBT had been embraced by managers and government officials because it helped them to guard against 'curriculum creep', meaning that the curriculum was often weighed down with unnecessary content and determined on the 'basis of job security'. CBT was seen by these administrators as a way of providing systematic methods for implementing program monitoring and budgeting decisions as well as an objective rationale for difficult and unwelcome decisions.

Competency measures were also seen as safeguards against any legal battles that might be mounted against training providers. They allowed institutions to provide objective evidence to courts of what was taught and when, the performance of students in assessments and the dates on which these occurred. In this way institutions could prove that they had taken all the precautions to guarantee appropriate application of a skill or competence. Jackson argues that when the competency framework is taken to mean a set of institutional arrangements, 'it tells more about the adequacy of an organisational course of action-instruction and assessment than it does about performance ability of individual students' (p.193).

Flexible implementation of CBT

Mulcahy and James (1999) surveyed 195 training managers (or their equivalent personnel) from large, medium and small companies in four industry sectors across all States and Territories. The industry sectors examined included manufacturing, services, construction and agriculture, forestry and fishing. Some mining companies were also included in the Western Australian and Northern Territory sample. The researchers found that most of the companies

conducted in-house training in the form of off-the-job or on-the-job training. The training was conducted by enterprise-based teachers who were company employees, or teachers employed by public or private training providers.

The researchers found that the major defining attributes of competence in workplaces was really 'knowing how to do it'. They also found, however, that managers believed that even though CBT could be useful in the development of some specific skills, it could not always deliver changes in attitude or behaviour. Mulcahy and James identified instances in the human services area where particular competencies were especially hard to measure; for example, a nurse needs to be able to develop good interpersonal relations with her patients. This means that he/she needs 'to like people': an attribute that is particularly difficult to quantify and measure.

Mulcahy and James found that a 'mix and match' or 'top up' strategy was used in the implementation of standards in workplaces. It was not unusual for national and enterprise-specific competency standards to be used simultaneously in the same enterprise. In one company the national standards were used as generic guidelines, with specific enterprise-based competencies identified to meet company needs. In another enterprise the national standards were used to improve skills, give formal qualifications and recognise prior learning, but the enterprise-specific competencies were used to teach and improve those skills seen as being relevant to the enterprise.

According to Mulcahy and James, there are also accepted ways of doing things which, although unwritten and informal, provide standards by which workplace performance can be judged. These informal standards are 'what the market expects'. In this situation, training is based on the 'collective experience of managers and not something that comes from a book' (p.34).

The size of the organisation will also affect the implementation of CBT. Mulcahy and James found that small companies found it difficult to implement a formal CBT approach to training staff. This was because they did not have the personnel to provide the formal in-house training, assessment, or the financial resources to provide the time and the effort to maintain quality standards. In addition, they lacked an adequate awareness of competency standards and the successful implementation of CBT.

Although small businesses did not take a formal or standards-based approach to training, they implemented informal training. Misko et al. (1996) found that

managers in small businesses used many different ways to ensure that their employees learnt a new job. These ranged from one-on-one instruction, modelling the behaviour, demonstrating the behaviour, to sitting with the employee until they had learnt the skill.

Increased accountability

Not all managers believe in a flexible approach to the setting of competency standards. There are some, especially in those industries with stringent licensing requirements, who desire national standards which are highly prescriptive, so that everyone is doing the same thing.

Competency standards help to implement systems of accountability in enterprises. They can help to establish benchmarks and provide information for reports on occupational health and safety issues, quality assurance and client feedback. Where registers of employees skills are used, these provide management with the information required to plan and measure workforce skills. Information on skills registers also helps individuals on selection panels to allocate positions to interviewees claiming to have the requisite skills.

Unresolved issues

Unresolved issues and themes identified by Mulcahy and James include the costs of setting up and maintaining competency systems as well as those involved in tailoring CBT to the requirements of individual enterprises. Some concerns revolved around the issue of assessment when non-graded assessment was used. Employers expressed concern that they were unable to tell how well their trainee was doing. Concerns were also voiced about the inability of CBT to assess attitudes, which in industries like the hospitality industry were hard to measure. There was also a risk that individuals were pushed through courses too quickly. This was especially the case in areas where dangerous repercussions could occur if trainees did not have enough experience to consolidate their training. Another concern related to ensuring the currency of a competency, especially if the skills were not employed in the current job. These concerns were voiced with respect to competencies obtained in crane operator courses and fork-lift operator courses.

CBT was perceived to be only as good as its assessors. Incidences were reported of assessors who did not have the courage to fail people, or where

assessors came across trainees who had been deemed competent by their employers but were not judged to be so by the assessors. There were also cases where training was not undertaken.

Mulcahy and James found that issues concerning the relationship between pay or promotions and the achievement of competence through competency-based assessment still existed. This is especially the case in enterprises where the numbers of promotion positions are few and where the competency is not being used in the current job. There were also concerns that the lack of time-serving arrangements meant that trainees had to be paid full adult wages because they had completed their courses but they still worked like trainees.

In one construction company, workers were found to be afraid, suspicious and against the notion of being assessed. Because they believed that the real motive for assessment was to target retrenchments, they were unwilling to admit what they could or could not do or which tasks they found difficult to perform.

In examining the contribution of CBT to education and training, Mulcahy and James came to the conclusion that CBT had contributed to the development of procedural knowledge defined as 'specific skills for specific jobs' (p.49)—the solving of routine problems. They also believed that it has contributed to cross-skilling and multi-skilling. Their research showed that CBT continues to undervalue the 'importance of experience and tacit and conceptual knowledge' and the 'situated nature of skills' (p.49). Because CBT was outcomes- rather than process-based, it often did not check for the consolidation and retention of knowledge once the competency standard had been achieved. In addition, there was little emphasis on the knowledge or theory that underpinned the standards being achieved.

Individualised approaches to training

Employers in the Billett et al. (1999) study believed that there had been significant changes to the training arrangements for their employees under CBT. In particular, they saw benefits in the individualised approaches to training and the reduction of the amount of college time expected of apprentices and trainees who also had the ability to progress through their work rapidly. They also saw advantages in increased opportunities for assessment to take place on the job and in more frequent interaction between enterprises and training providers.

Dickson and Bloch (1998) interviewed representatives of 68 ITABs, two-thirds of which had three or more years of experience with CBT. They were asked to evaluate the benefits and concerns derived from CBA. The two top major benefits were identified by ITABs for their industries as providing more accurate skill assessments and meeting industry needs. The third most frequently identified benefit was that it was a better method for workers. There were few ITABs that saw benefits for industry in terms of the provision of qualifications or the valuing of prior learning. Disadvantages were perceived as poor communication about CBA, high associated costs and time commitments.

Discussion and conclusions

Will CBT deliver a skilled and flexible workforce?

THIS REVIEW OF the research on the extent, nature and quality of the implementation of CBT in Australia has shown that although reforms associated with CBT are gradually being adopted in organisations delivering accredited VET training, there continues to be substantial debate about its long-term effectiveness. The debate has largely centred around whether or not CBT, as presently promulgated under the NTF, can deliver a more flexible and adaptable workforce—one which will improve the competitiveness of Australian industry in the global market place.

Doubts in the ability of CBT to achieve these aims have, in the main, been advanced by educators and researchers. Their misgivings are based on the accuracy of core CBT assumptions relating to how skills are acquired and how they are to be judged as having been acquired. That is to say, whether or not a system which is primarily performance-based and focussed on detailed minimal prescriptions of what counts as skills acquisition will really lead to better long-term and the more effective learning which is required for current workplaces and those of the future. Also called into question is the premise that students are able to transfer skills to help them to adapt to a changing workplace without specific grounding in context-specific knowledge and experience in the areas in which these skills are to operate. These include personal, interpersonal, technical and analytical skills.

If we examine the NTF concept of competency and the way it is to be assessed, it appears that those who criticise CBT because of its behaviourist approach and lack of attention to knowledge, skills and values have been too harsh. They have not taken seriously the framework's insistence that competency

standards must 'incorporate appropriate underlying skills and knowledge as this relates to competence in the workplace, and deal with attitudes and values in a way that focusses on their relationship to outcomes achieved' (ANTA 1998, p.11). Nor have they examined the NTF assessment guidelines which insist that competency standards must incorporate 'comprehensive evidence guides designed to support the assessment of the competency' (ANTA 1998, p.19). These include 'sufficient detail(s) to ensure that the assessment of competency incorporates assessment of underpinning knowledge, skills and application' (ANTA 1998, p.19). Where critics have acknowledged the inclusion of knowledge and values to the standards, they argue that these do not go far enough to give a true indication of competence.

Developing 'rounded' workers

Stevenson (1995) and Ryan (1997) are concerned that it is not enough to restrict learning for the workplace to the skills prescribed in the standards. They believe that a CBT system will not provide opportunities for learners to develop other forms of knowledge and values that will help them to become more 'rounded' workers and members of society in general. If this is true, then it seems that what is required is not the abandonment of CBT as a method for delivering workplace skills but the expansion of requirements for students in CBT programs to undertake elective or prescribed modules or courses which deal with these extra areas of learning. These modules can then be used to complement the modules aimed at developing workplace skills according to NTF standards. Of course, such an approach would not satisfy the concerns that educators have with a fragmented and modularised program of training which they claim provides little opportunity for synthesis of information and the drawing-out of larger themes and underlying principles in a particular knowledge or skills domain. In addition, a process of identifying the type of knowledge and values which will best develop 'rounded' workers and members of society would also have to be established. Although Mayer has already identified some of these, they may not go far enough to produce a flexible as well as 'rounded' worker or member of society.

Protecting the curriculum

Sobski's (1998) reasoned plea for the protection of the curriculum as another means of providing the NTF standards also makes a lot of sense in this regard.

There is no reason why Sobski's 'structured and sequenced learning plan', like the curriculum, cannot be used to provide the endorsed standards of the training packages as well as those skills required by a particular occupation but not included in the training packages. The training packages describe the essential requirements that must be covered. Nevertheless, skills that relate to an occupation but are not regarded as essential skills may be included. However, the development of a capacity in students for Stevenson's 'prudent and principled action' is going to be more difficult to address without students being given opportunities to discuss philosophical issues within modules or to attend courses which specifically deal with these issues.

The methods by which competency standards are achieved are not prescribed in the training packages. Therefore, there is nothing to stop teachers from addressing issues identified by Stevenson in the achievement of certain competencies. The training packages have the capacity to broaden the range of learning materials and learning activities that can be used rather than constrain them. Sobski may not have realised that by not prescribing the types of learning materials that can be used, or how the standards are to be delivered, the framers of the NTF may have been looking for ways to revive the role of curriculum.

Developing non-routine problem solvers

It has been noted that critics of CBT have attacked the system for ignoring the need for students to learn to deal with non-routine problems that are associated with performance in the workplace. The system has also been criticised for not providing enough scope for the application of novel ways of solving problems or performing a skill. If we examine the NTF's description of the four components of competency, then we must accept that, in theory, they have tried to address these issues. The NTF's conception of competency comprises proficiency in task skills, task management skills, contingency management skills and job/role environment skills. Non-routine forms of behaviour and creativity are required if learners are to demonstrate 'contingency management skills'. What is problematic, however, is how students learning in a modularised environment are going to have the time within a module to develop these skills, and how assessors are going to have the time to assess enough of these skills to produce reliable and valid assessments. Another problem also arises in training students for the non-technical aspects of occupations in the performing or creative arts.

Improving accessibility

The fragmentation of learning into specific modules benefits those who must fit in training to meet commitments to work or to changes in their life circumstances. However, it must also be acknowledged that it makes the task of integrating concepts between different bodies of related knowledge difficult to arrange. Stevenson and Ryan are especially critical of this fragmented approach. Nevertheless, it is interesting to note that even after the NTB integrated into their definition, notions of competence as proposed by cognitive scientists such as Stevenson and Hager, Stevenson continued to be critical of it. The NTB was accused of having politically 'colonised the cognitive construction of competence' (Stevenson 1995). It seems that the message being conveyed by Stevenson is that it is essential that students be given opportunities to synthesise concepts from related fields. However, when bodies like the NTB or its successors attempt to synthesise knowledge from different disciplines in order to refine their definitions of competence to incorporate notions of values and attitudes, then Stevenson criticises these bodies for exhibiting controlling-type behaviours or methods of political colonisation. This unusual inconsistency in Stevenson's logic is difficult to understand.

Recognising the importance of experience and context-specific knowledge in the development of expertise

The critics of CBT make good sense when they reproach the system for not paying enough attention to the role of context-specific knowledge and experience in the development of expertise. There is extensive evidence that expertise is acquired through a deep and comprehensive understanding of the milieu in which it is to operate. In addition, it is developed through repeated and varied practice and experience of tasks required in this context. Providing vocational students with the opportunity to be assessed as competent performers without substantial experience, knowledge and understanding of a particular domain may be doing them a disservice when they subsequently go into the workplace. The credibility of their qualifications may also be diminished by comparison with those of other workers, particularly in trade-

based occupations with a tradition of having served one's apprenticeship in terms of an acceptable period of time.

Having a national structured and standards-based approach to the development of skills will, in theory, have the potential to increase the likelihood that all students participating in accredited training will be helped to develop the essential skills required for survival in the workplace. What is problematic is whether in practice enough time and resources will be available for teachers and trainers to develop the learning and assessment resources required, to provide guidance and feedback to individual learners, and to receive training in how to best operate in a changed training environment.

Promoting practical solutions

We have learnt from Smith and Lowrie (1997) that training providers are trying hard to implement CBT in their learning environments. They are using innovative ways for dealing with problems that were not envisioned by the developers of CBT policy and adapting it to suit their local conditions. This must be taken by the NTFC to be an encouraging sign. It means that teachers are taking the new requirements seriously. It also means that they are reviewing the ways in which they have always delivered training and have made alterations to their practices. However, it also means that they have applied CBT in a critical or thinking manner. They have used their professional judgements based on their years of experience of students' learning patterns to modify programs so that the standards can be delivered. Ways in which providers have dealt with different problems encountered by CBT should be promoted by the NTFC in regular dissemination activities. Such activities may also help to overcome the pockets of resistance and insecurities about assessment processes uncovered by Cornford (1997a). It is possible mistaken perceptions of the teacher's role under CBT still exist. Knowing the ways other teachers have gone about solving such problems can help teachers modify their own programs.

However, the findings have also shown that teachers are still experiencing problems with implementing the major features of CBT, namely flexible entry/exit points, self-paced learning and RPL. Further professional development activities in these areas are required. The introduction of training packages may also have added another element of confusion in the minds of teachers. It is important that they are provided with sufficient support to use and interpret the training packages and that they are made aware that they are no longer

constrained in their use of learning materials and activities as long as the competency standards are achieved.

Although dissemination of successful ways for solving CBT-derived problems may help reduce teacher anxieties and provide examples for their own practice, the question of whether or not it is the best form of training to deliver industry-specific skills to industry still remains.

Directions for further research

CBT WAS INTRODUCED to help develop the skills of students and existing workers so that the position of Australian industry on global markets would be improved. Although there have already been many studies which have examined the implementation of CBT in Australia and overseas, an important question that needs to be answered concerns the impact of CBT on student outcomes and on the development of skilled and adaptable workers. Such answers cannot be provided without comprehensive control group studies as well as studies based on longitudinal information.

A comparison between the training outcomes of students who had undertaken studies prior to the introduction of CBT and those of students who had undertaken similar studies after the implementation of CBT would also help us to understand the impact of CBT on student learning.

Until CBT has been fully implemented by training providers in the way it was intended, and fine-tuned in ways that will provide ample opportunities for it to operate successfully, the answer as to whether or not it has helped to improve the international competitiveness of Australian industry will continue to be difficult to determine.

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